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AUTHOR Pedrini, Bonnie C.; Pedrini, D. T.
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ABSTRACT

The univariate and multivariate assessment of general achievement/aptitude for regular and disadvantaged freshmen at the University of Nebraska at Omaha were investigated. Correlational (single and multiple) and variance analyses (Maximum n = 150) and chi square analyses (maximum n = 1,214) assessed American College Test (ACT) Composite scores with several variables (for example, race; sex; financial aid; employment; instruction; cumulative grade point average (GPA); attrition/persistence). Separate regression equations for various groups and subgroups result in greater precision. Singly or multiply, the significant assessors of ACT scores are race, primarily, and GPA, secondarily. Additional assessors appear unnecessary. Significant ACT variance differences between Blacks and Whites, and between Blacks and the standardization population raise questions regarding normative data. General achievement/aptitude is significantly delineated (1) by race and by GPA, for the population, for nonexperimental freshmen, and for experimental and/or control freshmen, (2) by financial aid and by attrition/persistence, for the population, and for nonexperimental freshmen, and (3) by instruction with or without financial aid, for the population. (Author/MV)

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Multivariate Assessment of ACT Composite Scores of Disadvantaged and Regular Freshmen

Bonnie C. Pedrini and D. T. Pedrini

University of Nebraska at Omaha

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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Abstract

Investigated the univariate and multivariate assessment of general achievement/aptitude for regular and disadvantaged freshmen at the University of Nebraska at Omaha. Correlational (single and multiple) and variance analyses (maximum $n = 150$) and chi square analyses (maximum $n = 1,214$) assessed ACT Composite scores with several variables (for example, race; sex; financial aid; employment; instruction; cumulative grade point average, GPA; attrition/persistence). Separate regression equations for various groups and subgroups result in greater precision. Singly or multiply, the significant assessors of ACT scores are race, primarily, and GPA, secondarily. Additional assessors appear unnecessary. Significant ACT variance differences between Blacks and Whites, and between Blacks and the standardization population raise questions regarding normative data. General achievement/aptitude is significantly delineated (a) by race and by GPA, for the population, for nonexperimental freshmen, and for experimental and/or control freshmen, (b) by financial aid and by attrition/persistence, for the population, and for nonexperimental freshmen, and (c) by instruction with or without financial aid, for the population.

Multivariate Assessment of ACT Composite Scores of Disadvantaged and Regular Freshmen

Standardized tests are often used to predict grades, and grades are often used to predict attrition/persistence. Other variables have been implicated in such predictions, for example , race, sex, marriage, socioeconomic level, financial aid, employment, and special programs (Pedrini & Pedrini, 1973b).

Standardized (e.g., general achievement/aptitude) tests favor middle class persons. Disadvantaged (i.e., poverty) and/or minority persons are not favored--their mean scores are typically below the population mean (Pedrini & Pedrini, 1973a). Such tests are often used for screening purposes, to aid in the selection of prospective students (Pedrini & Pedrini, 1974). What is needed is to assess the predictors. What attributes (e.g., race) and measures (e.g., grades) are related to general achievement/aptitude (viz., American College Test scores)?

This investigation considered univariate and multivariate assessments of ACT Composite scores of disadvantaged and regular freshmen. The variates included race, sex, financial aid, employment, cumulative grade point average (GPA), and attrition/persistence.

Method

Subjects

The population for this investigation included full-time, fall, beginning University of Nebraska at Omaha (UNO) freshmen of the 1972-73 academic year who had taken the ACT (n = 1,214). Delineated were two research samples, experimental and control, selected from the population. The experimental group consisted entirely of disadvantaged students enrolled in a UNO experimental program. There were 76 such students identified in the

population. However, one student was excluded because his registration data were not available. Thus, 75 experimental subjects were categorized for race and sex yielding 16 Black men, 19 Black women, 18 White men, and 22 White women. The control group, equated in number for race and sex with the experimental group, was a random sample of regular students drawn from the stratified population. Thus, the total number of disadvantaged and regular students was 150.

Each experimental student received special instruction (six credit hours of humanities and social studies per semester, and extensive guidance) and financial aid (free tuition). No control student received the special instruction; though he or she may have received financial aid.

The experimental and control groups were not representative of the UNO ACT freshman population. The experimental and control groups were 47% Black and 53% White, 45% men and 55% women. Comparable figures for the UNO ACT freshman population (including the disadvantaged and regular students) were 11% Black and 89% White, 57% men and 43% women. Interestingly, most subjects in the UNO ACT freshman population responded to the denotation of sex on registration forms, but only about three fifths responded to the denotation of race.

Materials

The basic materials used in this investigation were the American College Test (ACT) and the cumulative freshman grade point average (GPA, or grades). Specifically, the ACT Composite standard score (as discussed in ACT Program, 1972, pp. 2-3) and the cumulative freshman GPA for the fall and spring semesters were considered for each student.

Procedure

Various subsets were considered for descriptive, correlational, variance,

and chi square analyses. For correlational and variance analyses, the subsets referred to subjects within and between the experimental and control groups (maximum $\underline{n}$ = 150). For chi square analyses, the subsets referred to the UNO ACT freshman population (maximum $\underline{n}$ = 1,214).

Subjects were classified as to race (Black; White), sex (men; women), race and sex (Black men; Black women; White men; White women), financial aid (recipients; nonrecipients), grades (subjects with below average cumulative GPAs, i.e., less than 2.00, on a 4.00 scale; subjects with average or above average cumulative GPAs, i.e., equal to or greater than 2.00, on a 4.00 scale), and attrition/persistence (dropouts, i.e., subjects who were not continuously enrolled for the fall and spring semesters of the academic year and/or did not re-enroll for the fall semester of the following academic year; persisters, i.e., subjects who were continuously enrolled for the fall and spring semesters of the academic year and re-enrolled for the fall semester of the following academic year).

For correlational analyses, the experimental group, only, was subgrouped by employment, hours per week (0; 1-10; 11-20; 21-30; 31+). Employment information was not available for control subjects.

For variance and chi square analyses, subjects were additionally subgrouped by instruction of financial aid recipients (special, regular), control group financial aid (assistance received, assistance not received), programs (special instruction and financial aid received, regular instruction and no financial aid received).

Results and Discussion

Descriptive data (not shown) were collated in order to compare and contrast the general achievement/aptitude of the various groups and subgroups. This was a precursor to the statistical analyses per se. One problem was

noted. The ACT scores of Blacks were restricted in standard deviation (n = 70, SD = 3.7) as compared to the ACT scores of Whites (n = 80, SD = 5.4). More importantly the ACT scores of Blacks were restricted as compared to the ACT standardization population (N = 2,712,347, SD = 5.4). And restriction appeared for all groups and subgroups of Blacks. Consequently, this problem was corrected in the correlational analyses (Wells & Fruchter, 1970; Tritchler & Pedrini, 1975) and discussed in the variance analyses.

Single and Multiple Correlations

First, product moment correlations were computed (data not shown) to determine the degree of association between general achievement/aptitude and other variables for the experimental group, control group, and subsets within and between these groups. General achievement/aptitude (T: ACT Composite standard scores), as the dependent variable, was correlated with each of the following independent variables: group (U: experimental, control), race (R: Black, White), sex (S: men, women), financial aid (F: assistance received, assistance not received), employment, hours per week (E: 0, 1-10, 11-20, 21-30, 31+), grades (G: cumulative GPA), and attrition/persistence (A: drop out, persist).

Employment data were available for experimental students only. Since employment was coarsely grouped into five categories, the E x T correlations were corrected (Guilford & Fruchter, 1973, pp. 322-324). Since the variability of ACT scores for Blacks was restricted, the G x T correlations for Blacks (men and/or women) were corrected (Wells & Fruchter, 1970; Tritchler & Pedrini, 1975). The E x T correlations for Blacks were corrected for coarse grouping (of variable E), but not for restricted range (of variable T).

The correlational trends implied that race was very closely associated with general achievement/aptitude--Blacks with lower ACT scores, Whites with

higher ACT scores. Grades were closely associated with general achievement/aptitude--lower grades with lower ACT scores, higher grades with higher ACT scores. Group and employment were somewhat related to general achievement/aptitude. The former was significant for financial aid recipients--control group with lower ACT scores, experimental group with higher ACT scores; the latter was significant for experimental students, especially women--working less hours with lower ACT scores, working more hours with higher ACT scores. Interestingly, for White men or for Black men (despite some corrections) there were no significant correlations with ACT scores. Variables S, F, and A produced no significant single correlations with T.

Second, stepwise multiple correlations were computed (data not shown) to determine the best assessors of general achievement/aptitude for the experimental group, control group, and subsets within and between these groups. Corrections for multiple correlations (resulting in c$\underline{R}$s) and for standard errors (resulting in c$\underline{SE}$s) were required because of the relatively large number of assessor variables employed with small samples (Guilford & Fruchter, 1973, pp. 366-367).

Confounded variables U (group: experimental, control) and F (financial aid: assistance received, assistance not received) were not considered in the same regression equations. Hours of employment (E) pertained to experimental subjects only. Thus, multiple assessors which considered experimental subjects, only, included variable E.

The separate multiple correlations were not necessarily independent of each other. But in cumulating results, trends were important.

The assessment of general achievement/aptitude revealed that 37 of the 55 corrected multiple correlations were significant. R (race) was the first variable (28 times) or second variable (1 time) in 29 significant multiple

regression equations. Eight of the 37 significant multiple regressions could not consider R as an assessor variable because subjects were identified according to their race. Thus, in 29 of 29 significant multiple regressions, R was the primary or secondary assessor. Almost always (there were two exceptions only), when R was a variable the corrected multiple correlation was significant. And when R was the primary assessor, there generally appeared (in 21 of 28 instances) to be no significant difference between race as a single assessor and race as part of a multiple assessor. For example, considering all subjects, the single correlation between R and T was .68 and accounted for approximately 46% of the ACT variance; the corrected multiple correlation for T was .72 and accounted for approximately 52% of the ACT variance.

Analogously, G (grades) was the second variable (19 times) or first variable (9 times) in 29 significant multiple regression equations. Eight of the 37 significant multiple regressions could not consider G as an assessor variable because subjects were identified according to their grades. Thus in 28 of 29 significant multiple regressions, G was the secondary or primary assessor. And when G was the primary assessor, there generally appeared (in 7 of 9 instances) to be be no significant difference between grades as a single assessor and grades as part of a multiple assessor.

Interestingly, when G was the second variable, R was the first variable; and when R was the second variable, G was the first variable. When R was not included as an assessor variable, G was always the first variable and A (attrition/persistence) was often the second variable. When G was not included as an assessor variable, R was always the first variable with no consistent second variable. Thus, in almost all the significant multiple correlations R and/or G accounted for the plurality of ACT variance and additional

assessors appeared unnecessary.

Other trends for subjects were noted. In terms of general achievement/aptitude, women, subjects with average or above average grades, experimental subjects, and Whites were more assessable than men, subjects with below average grades, control subjects, and Blacks, respectively. In other words, multiple correlations of general achievement/aptitude for the former were higher than for the latter.

Dyadic and triadic combinations of the categories (for subjects) did not necessarily manifest higher multiple correlations, uncorrected or corrected. Stated differently, going from a single category to a double category to a triple category did not necessarily increase multiple correlations.

In assessing general achievement/aptitude, the corrected multiple correlations for all subjects (two equations) were .72 and the range of significant correlations was from .39 to .82. Thus, considering students according to various sets and subsets proved more efficacious than considering all subjects together.

The efficiency of the regression equations was tested with larger samples. For all subjects and for financial aid recipients, actual ACT scores were compared with predicted ACT scores (developed from the regression equations). A predicted ACT Composite score of 14 was the cutoff point (i.e., ACT scores below 14 were more than one SD below the mean and were considered below average; ACT scores of 14 or above were within or above one SD and were considered average/above average). Since F and U were confounded (mentioned previously), two regression equations (one which included F, financial aid, as a variable; one which included U, group, as a variable) had to be computed for all subjects (n = 143): ACT score = 1.53 + 7.47R + 2.11G - .60S - .76A + .56F, cR = .72, cSE = 4.55; ACT score = 2.98 + 7.56R + 2.06G - .63S - .79A -

.34U, $c\underline{R}$ = .72, $c\underline{SE}$ = 4.55. Using the above equations, overall accuracy for predicted versus actual ACT scores was about 78%, with F as a variable, or about 80%, with U as a variable. Analogously, accuracy for below average ACT scores (predicted versus actual) was about 73% or 76%, and accuracy for average/above average ACT scores (predicted versus actual) was about 82% or 84%. For financial aid recipients ($\underline{n}$ = 96, ACT score = 5.51 + 7.20R + 2.18G - 1.35U - .98S - 1.24A, $c\underline{R}$ = .72, $c\underline{SE}$ = 4.46), comparable figures (overall accuracy, accuracy for below average ACT scores, accuracy for average/above average ACT scores) were 80%, 76%, and 83%.

In summary, for the significant single assessments of general achievement/aptitude, race ($\underline{r}$ = .69, $\underline{n}$ = 150, $\underline{p}$ < .01) and grades ($\underline{r}$ = .45, $\underline{n}$ = 143, $\underline{p}$ < .01) were adequate. For the significant multiple assessments of general achievement/aptitude, race was the primary variable and grades were the secondary variable. In almost all of the significant multiple correlations, race and/or grades accounted for the plurality of ACT variance and additional assessors appeared unnecessary. Women, subjects with average or above average grades, experimental subjects, and Whites were more assessable (i.e., they showed higher multiple correlations) than their counterparts. Although multiple assessments did not necessarily increase when subjects were differentially subgrouped, the results were varied and more precise (range of $c\underline{R}$s from .39 to .82). The overall accuracy of the regression equations for the assessment of ACT scores with large samples ($c\underline{R}$ = .72, $\underline{n}$ = 143) was about 79% (using a predicted ACT Composite score of 14 as the cutoff point).

Analyses of Variance

Mean and variance analyses were computed to determine if the ACT differences between and within the experimental and control groups were significant. Each analysis used a four (2x2x2x2) or five (2x2x2x2x2) factor unweighted

means solution. Four-factor analyses of variance had to be used in some instances to avoid an excessive number of blank cells.

For any of the analyses of variance, if there were significant main effects the interpretations were straight forward (since each factor had only two levels). If there were significant interactions, further tests of simple effects were computed using Kirk's (1968, pp. 179-182) technique to determine critical values.

ACT Composite standard scores were the array inserts. Analyses I-VII (summarized in Table 1) considered various factors--U (group: experimental, control), I (instruction of financial aid recipients: special regular), C (control group financial aid: assistance received, assistance not received), P (programs: special instruction and financial aid received, regular instruction and no financial aid received), R (race: Black, White), S (sex: men, women), A (attrition/persistence: drop out, persist), G (grades: below average, average and above average).

Experimental (i.e., disadvantaged) students received special instruction (six credit hours of humanities and social studies per semester, and extensive guidance) and financial aid (free tuition). Control (i.e., regular) students did not receive the special instruction, though they may have received financial aid. Hence factors I, C, and P were delineated to study the relationships of special instruction and/or financial aid. Sample sizes varied because of the different factors, and because subjects who did not receive grades (two experimental, five control) had to be eliminated from analyses which included G.

Insert Table 1 about here

As mentioned in the introductory Results and Discussion section, there was a problem with the ACT scores of Blacks which were restricted. Corrections were made in the correlation sections so as to offset restricted ranges (really restricted standard deviations). Were the restrictions in violation of homoscedasticity or homogeneity of variance (Guilford & Fruchter, 1973, pp. 168-169)? For each of the analyses (I-VII), there were significant differences between the sample variances, ps < .01. For example, in Analysis I, F (78, 63) = 3.01, $p < .01$. Considering the ACT descriptive data: Blacks (n = 64, M = 11.5, SD = 3.7) had a markedly lower mean and smaller standard deviation than Whites (n = 79, M = 20.2, SD = 5.4) or than the ACT standardization population (N = 2,712,347, M = 19.2, SD = 5.4). Thus for Blacks, at least in this investigation, the question could be raised as to the advisability of separate ACT norms. Do the samples truly come from the same population of from different populations? Caveat emptor in either instance.

Remembering the above delimitation, race contributed robustly to general achievement/aptitude in every analysis of variance. Blacks had significantly lower ACT scores than Whites, Analysis I, F (1, 111) = 45.31, $p < .01$; Analysis II, F (1, 84) = 39.91, $p < .01$; Analysis III, F (1, 80) = 28.49, $p < .01$; Analysis IV, F (1, 59) = 31.10, $p < .01$; Analysis V, F (1, 54) = 27.87, $p < .01$; Analysis VI, F (1, 109) = 79.33, $p < .01$; Analysis VII, F (1, 104) = 64.96, $p < .01$. In this section (analyses of variance), the foregoing and following statements could be stated conversely.

Race also reached criteria in each significant interaction (see Table 1). Blacks with below average grades had significantly lower ACT scores than Whites with below average grades, Analysis I, R at G_1, F (1, 111) = 9.60, $p < .01$; Analysis VII, R at G_1, F (1, 104) = 13.89, $p < .01$. Similarly, Blacks with average or above average grades had significantly lower ACT

scores than Whites with comparable grades, Analysis I, R at G_2, F (1, 111) = 41.78, $p < .01$; Analysis VII, R at G_2, F (1, 104), $p < .01$. Black male regular instruction financial aid recipients with below average grades had significantly lower ACT scores than their White counterparts, Analysis III, R at $I_2S_1G_1$, F (1, 80) = 18.26, $p < .001$. Black male control financial aid recipients with lower grades had significantly lower ACT scores than White male control financial aid recipients with lower grades, Analysis V, R at $C_1S_1G_1$, F (1, 54) = 13.97, $p < .001$. The latter four-factor interactions and interpretations refer to the same men.

Grades (G) were partially effective in distinguishing general achievement/aptitude test scores. Persons with below average grades tended to have significantly lower ACT scores than persons with average or above average grades, Analysis I, F (1, 111) = 9.75, $p < .01$; Analysis VII, F (1, 104) = 9.57, $p < .01$. As simple effects, grades reached criterion in the significant two-factor interactions. Whites with lower grades tended to have significantly lower ACT scores than Whites with higher grades, Analysis I, G at R_2, F (1, 111) = 15.20, $p < .01$; Analysis VII, G at R_2, F (1, 104) = 17.30, $p < .01$.

Generally, sex (S) did not differentiate general achievement/aptitude. S did not occur as a significant main effect in seven analyses. But as a simple effect, S reached criterion in the significant four-factor interactions (see Table 1). White men regular instruction financial aid recipients with lower grades tended to have significantly higher ACT scores than White women regular instruction financial aid recipients with lower grades, Analysis III, S at $I_2R_2G_1$, F (1, 80) = 18.26, $p < .001$. White men control financial aid recipients with below average grades tended to have significantly lower ACT scores than their female counterparts, Analysis V, S at

$C_1R_2G_1$, F (1, 54) = 13.97, $p < .001$. Of course, these four-factor interactions and interpretations refer to the same persons. Basically, then, the relationship between sex and general achievement/aptitude could not be considered viable.

In summary, the variances of the Black and White samples were significantly different from each other. This raises the question: Do the samples, in this investigation, come from the same population or from different populations? Remembering the above delimitation, race was a robust distinguisher of general achievement/aptitude--Blacks had significantly lower ACT scores than Whites. Even when subjects with comparable grades were contrasted, Blacks had significantly lower ACT scores than Whites. For men control (in other words, regular instruction) financial aid recipients, race was effective in discerning students with below average ACT scores and students with average or above average ACT scores. That is, the relationship between Blacks and lower ACT scores (as well as Whites and higher ACT scores) prevailed. Generally, college students with lower grades tended to have lower ACT scores, and college students with higher grades tended to have higher ACT scores. But this pertained more to Whites than to Blacks. General achievement/aptitude was not differentiated by instruction and/or financial aid, or by attrition/persistence; and was not viably differentiated by sex.

Chi Squares

In this nonparametric section, the previous vagaries of unequal variances in columns and/or rows were of no concern. Proportional differences (2x2, fourfold contingencies) were computed between general achievement/aptitude and other variables for the UNO ACT freshman population and for subsets (experimental students, nonexperimental students) within the population.

General achievement/aptitude (T'), as the dependent variable, was contrasted with each of the following independent variables: U' (group: experimental, nonexperimental), I' (instruction of financial aid recipients: special, regular), P' (programs: special instruction and financial aid received, regular instruction and no financial aid received), F' (financial aid: assistance received, assistance not received), R' (race: Black, White), S' (sex: men, women), G' (grades: below average, average and above average), A' (attrition/persistence: drop out, persist). Significances, determined by two-tailed tests, are summarized in Table 2.

Insert Table 2 about here

General achievement/aptitude was dichotomized into below average ACT scores (i.e., standard scores more than one standard deviation below the mean, based on college bound seniors, ACT Program, 1972, p. 2) and average and above average ACT scores (i.e., standard scores within or above one standard deviation, based on college bound seniors, ACT Program, 1972, p. 2). Consequently, the latter scores were expected to predominate for the subsets.

Analysis of the U' x T', I' x T', and P' x T' chi squares indicated that the experimental group, nonexperimental group, regular instruction financial aid recipients, and regular instruction financial aid nonrecipients had greater proportions of higher ACT scores than lower ACT scores. However, the experimental group (i.e., disadvantaged students--special instruction financial aid recipients) had a greater proportion of below average ACT scores than the nonexperimental group, than regular instruction financial aid recipients, and than regular instruction financial aid nonrecipients.

This may have been related to the high concentration of Blacks in the experimental group. Blacks had general achievement/aptitude test scores significantly lower than Whites, as stated previously. There were 47% Blacks in the experimental group, whereas there were 4% Blacks in the nonexperimental group, 10% Blacks as regular instruction financial aid recipients, and 2% Blacks as regular instruction financial aid nonrecipients.

Focusing on the F' x T' results for the population and for nonexperimental freshmen, both financial aid recipients and nonrecipients tended to have higher rather than lower ACT scores, as expected. But the percentage of financial aid recipients with below average ACT scores was significantly larger than the percentage of financial aid nonrecipients with below average ACT scores. In addition to socioeconomics (financial aid based on need), race may have been involved. For the population, there were about 21% Black financial aid recipients and about 2% Black financial aid nonrecipients. For the nonexperimental freshmen, there were approximately 10% and 2%, respectively.

In every instance involving race and general achievement/aptitude, the fraction of Blacks with lower ACT scores was much greater than the fraction of Blacks with higher ACT scores, and the fraction of Whites with higher ACT scores was much greater than the fraction of Whites with lower ACT scores. Again, it was difficult to differentiate between the effects of race and socioeconomics. For the population freshmen, about 71% of the Blacks requested and about 69% received financial aid; about 31% of the Whites requested and about 27% received financial aid. For the nonexperimental freshmen, about 49% of the Blacks requested and about 43% received financial aid; about 27% of the Whites requested and about 23% received financial aid. For the population and for nonexperimental freshmen, then, race and financial

aid seemed interrelated.

Considering grades and general achievement/aptitude (G' x A') for the population and for nonexperimental freshmen, higher ACT scores prevailed for subjects with lower grades and for subjects with higher grades. However, the former had a greater proportion of below average ACT scores than the latter. For experimental freshmen, subjects with lower grades tended to have lower ACT scores and subjects with higher grades tended to have higher ACT scores.

Considering the relationships between attrition/persistence and general achievement/aptitude (A' x T') for the population and for nonexperimental freshmen, dropouts and persisters had higher rather than lower ACT scores. But the proportion of below average ACT scores was larger for dropouts than for persisters.

In summary, since general achievement/aptitude was dichotomized into below average and average/above average ACT scores, the latter scores tended to be overrepresented in the subsets. For the population, general achievement/aptitude was significantly related to instruction and/or financial aid, attrition/persistence, race, and grades; for nonexperimental freshmen, general achievement/aptitude was significantly related to financial aid, attrition/persistence, race, and grades; for experimental freshmen, general achievement/aptitude was significantly related to race and grades. That is, experimental students, financial aid recipients, dropouts, Blacks, and students with lower grades had significantly greater proportions of below average ACT scores than their counterparts. Interestingly, in every instance, Blacks reversed the expected pattern--they tended to be overrepresented with below average ACT scores. Also, experimental freshmen with lower grades tended to be overrepresented with below average ACT scores.

Major Findings

1. In the single and multiple correlations for the assessment of general achievement/aptitude (ACT Composite standard scores), for disadvantaged (experimental) and regular (control) freshmen, race was the primary, significant variable.

2. In the single and multiple correlations for the assessment of ACT Composite standard scores, for disadvantaged and regular freshmen, cumulative grade point average (GPA) was the secondary, significant variable.

3. In the significant multiple correlations assessing ACT scores, for the experimental and control groups and for subsets within and between these groups, race and/or grades accounted for the plurality of ACT variance and additional assessors appeared unnecessary.

4. Separate correlations and regression equations, for the experimental and control groups and for subsets within and between these groups, were efficacious. Significantly higher or lower correlations resulted and thereby greater precision.

5. There were significant variance differences between the ACT scores of Blacks versus Whites, and of Blacks versus the ACT standardization population. Would separate normative data be advisable? Caveat emptor in either instance.

6. For the ACT freshman population and for subgroups (nonexperimental, experimental and/or control), general achievement/aptitude was significantly delineated (proportion and mean differences) by race and by grades.

7. For the ACT freshman population and for nonexperimental freshmen (but not for experimental and/or control freshmen), general achievement/aptitude was significantly delineated (proportion differences) by financial aid and by attrition/persistence.

8. For the ACT freshman population (but not for nonexperimental, nor for experimental and/or control freshmen), general achievement/aptitude was significantly delineated (proportion differences) by instruction with or without financial aid.

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